776 — mutants available

WG 3.

W1421 - 1429.

1421 Cys
1423 IV
1425 Tyr
1427 Tr or Tyr
1429 Hist

1448 IV → Leu (only!) W1450. → Hist W1451

1449 Leu

1448 Cys IV → 1473-75 Mal-

WG 4 1430 - 1434

1430 Leuc → 1446 Try 1447 Pro
1431 Prol
1441 Prol → Try 1454 Meth 1455 1456 Arg 1457 Cys
Leu 1458 IV 1459

1446 Leu Try → 1460 - 1466 Lac- (mel Glu-) → 1464 Mal-Lac-Leu Try (1482-84)

1454 Pro Try → 1476-81 Lac-

↓ SR (SRP tester)
W1611

Reacts as F+ but does not transmit unless infected.

WG-7 W1396.

1495 Cys ⟶ 1998 Cyst. Pool, 1987 Cyst. typ.
1496 Isol
1497 IV
1498 Leu

WG 9 CA62 Lac –

1504 Prol or Tyr !
1505 Tyr
1506 Prol
1507 Hist or Prol.

WG 10 W1526A

~~math~~ W1877 math
~~hist~~ 1878 hist
W2022 hist
W2023 lys.
W2024 lysine → W2025 lysine + ?

W. K. Thomsen.

Induction and isolation of biochemical mutants

Mutants were isolated from stock cultures of ~~W1715~~ (WG 10) and W1715 (WG 15) of E. coli ~~strain K-12.~~ Cultures were grown in complete medium without either aeration or subsequent irradiation. Washed cells were incubated in minimal medium, to which various amounts of penicillin (100, 150 and 300 units per ml respectively) were added.

By using the replica plating technique, mutants were isolated in 4 experiments.

Experiment	Stock	Biochemical mutants
1.	WG 10	A - histidineless B - isoleucine-valineless C - methionineless. D - lysineless
2.	WG 10	E - isoleucine-valineless F - lysineless G - histidineless H - lysineless
3.	WG 15	1 - 32 all prolineless
4.	WG 10 lysineless (mutant F)	FLX - diauxotroph Lysineless and unknown factor

Subsequent testing indicated that the following were stable mutants. Others were discarded as repeated isolates of the same mutation or for other reasons.

1 A_2 - histidineless
2 B_2 - isoleucine-valineless
3 D_2 - lysineless
4 E - isoleucine-valineless
5 F - lysineless
6 H - lysineless
24 - prolineless (WG 15)
7 FLX - diauxotroph lysineless + unknown factor.

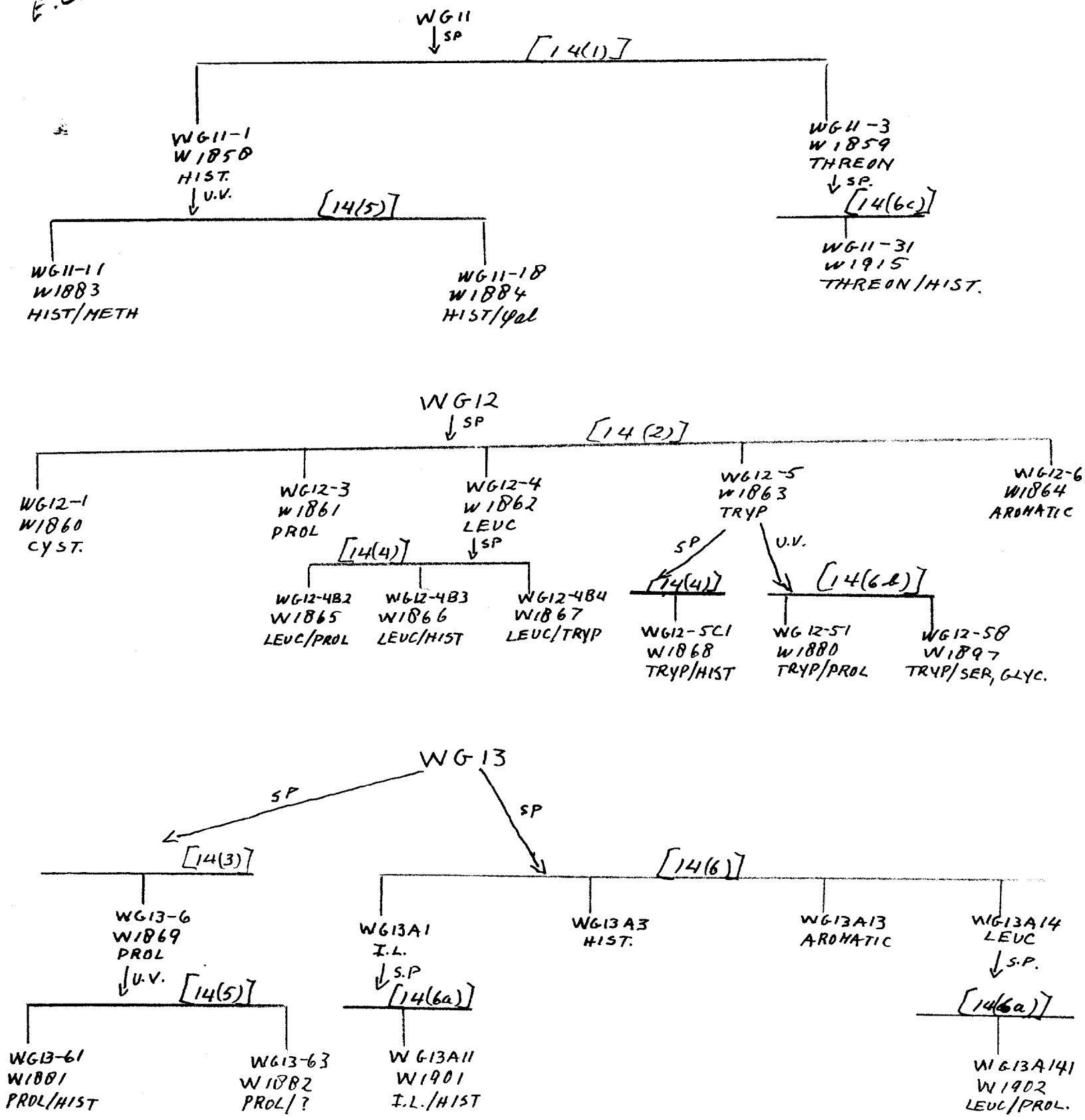
WG Mutants and Crosses

A description of all WG mutants made will be found on a seperate sheet. The first number given the mutant is the one under which the mutant can be found in my notebook; the second number given is the W number. The chart indicates which mutants were obtained in the same experiment and the number in parentheses indicates the experiment number in my notebook. All mutants were selected by the penicillin method. Sp indicates that the mutants selected had arisen spontaneously; U.V. indicates that mutants were induced by means of ultraviolet light. Four seperate attempts to put a marker other than histidineless or prolineless on W1895 ? failed.

The following crosses were made between WG strains:

Strain	WGs Crossed	Mutants used	Colonies/Plate
WG11	11 x 13	see under WG13	
WG12	12 x 12	1865 x 1868	ca 10
	12 x K12	1868 x 58-161	ca 50
		1868 x 1177	ca 30
	12 x 3	1865 x 1448	0, 2
		1868 x 1448	ca 5
	12 x 4	1868 x 1445	1, 2
	12 x 13	see under WG13	
WG13	13 x 13	1901 x 1902	1 to 6
	13 x 12	1902 x 1868	ca 200
	13 x K12	1902 x 811	6 to 10
	13 x 11	1902 x 1883	2, 0, 0
		1902 x 1915	1, 0, 0
		1902 x 1884	2, 0, 3
		1882 x 1883	1, 0, 0
		1882 x 1915	0, 0, 0
		1882 x 1884	0, 0, 0

E.C.


WG11
SP
[14(1)]
WG11-1
W1858
HIST.
U.V.
[14(5)]
WG11-11
W1883
HIST/METH
WG11-18
W1884
HIST/gal
WG11-3
W1859
THREON
SP.
[14(6c)]
WG11-31
W1915
THREON/HIST.
WG12
SP
[14(2)]
WG12-1
W1860
CYST.
WG12-3
W1861
PROL
WG12-4
W1862
LEUC
SP
[14(4)]
WG12-4B2
W1865
LEUC/PROL
WG12-4B3
W1866
LEUC/HIST
WG12-4B4
W1867
LEUC/TRYP
WG12-5
W1863
TRYP
SP
[14(4)]
WG12-5C1
W1868
TRYP/HIST
U.V.
[14(6a)]
WG12-51
W1880
TRYP/PROL
WG12-58
W1897
TRYP/SER, GLYC.
WG12-6
W1864
AROMATIC
WG13
SP
[14(3)]
WG13-6
W1869
PROL
U.V.
[14(5)]
WG13-61
W1881
PROL/HIST
WG13-63
W1882
PROL/?
SP
[14(6)]
WG13A1
I.L.
S.P
[14(6a)]
WG13A11
W1901
I.L./HIST
WG13A3
HIST.
WG13A13
AROMATIC
WG13A14
LEUC
S.P.
[14(6a)]
WG13A141
W1902
LEUC/PROL.

Wg 15 (W1715)

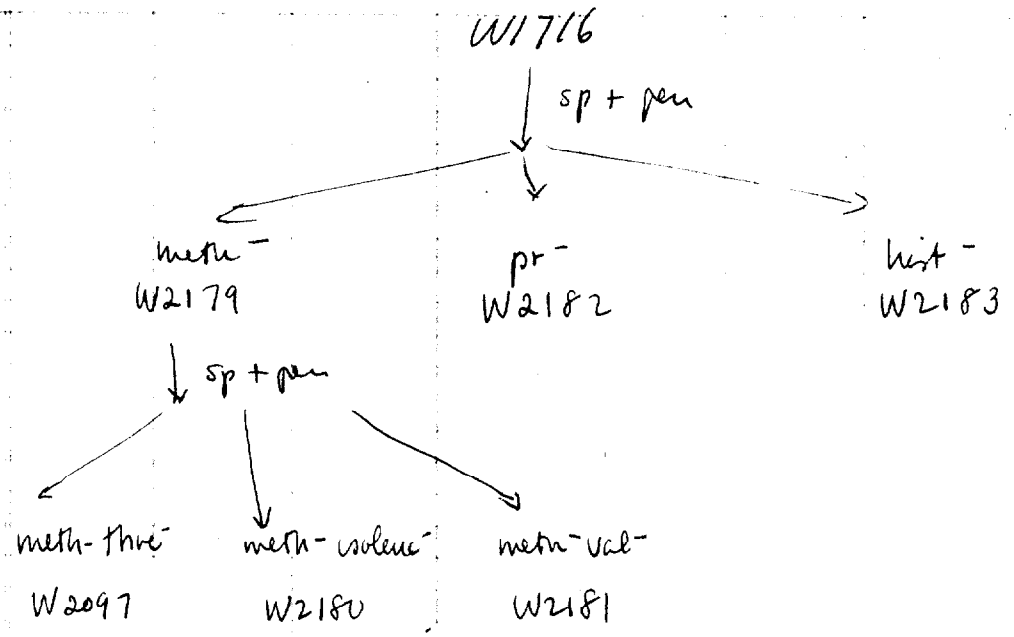
↓

W2026 probe

Wg 16

Mons

p. 160 and ben



Wg 24

PASkaa 3-12-1

↓ spont. + pen.

W2264 (trypto⁻) —spont. + pen.→ W2267 (trypto⁻ : hist⁻)

W2265 (arg⁻) → W2268 (arg⁻ : ile⁻)

W2266 (hist⁻) → W2269 (hist⁻ : Leu⁻)

Wg 26

PDSkaar 3-12-1

↓ sporul + pen

W2270 (Leuc⁻) —sporul + pen→ W2273 (Leuc⁻ : Hist⁻)

W2271 (IU⁻) ——→ W2274 (IU⁻ : Ang⁻)

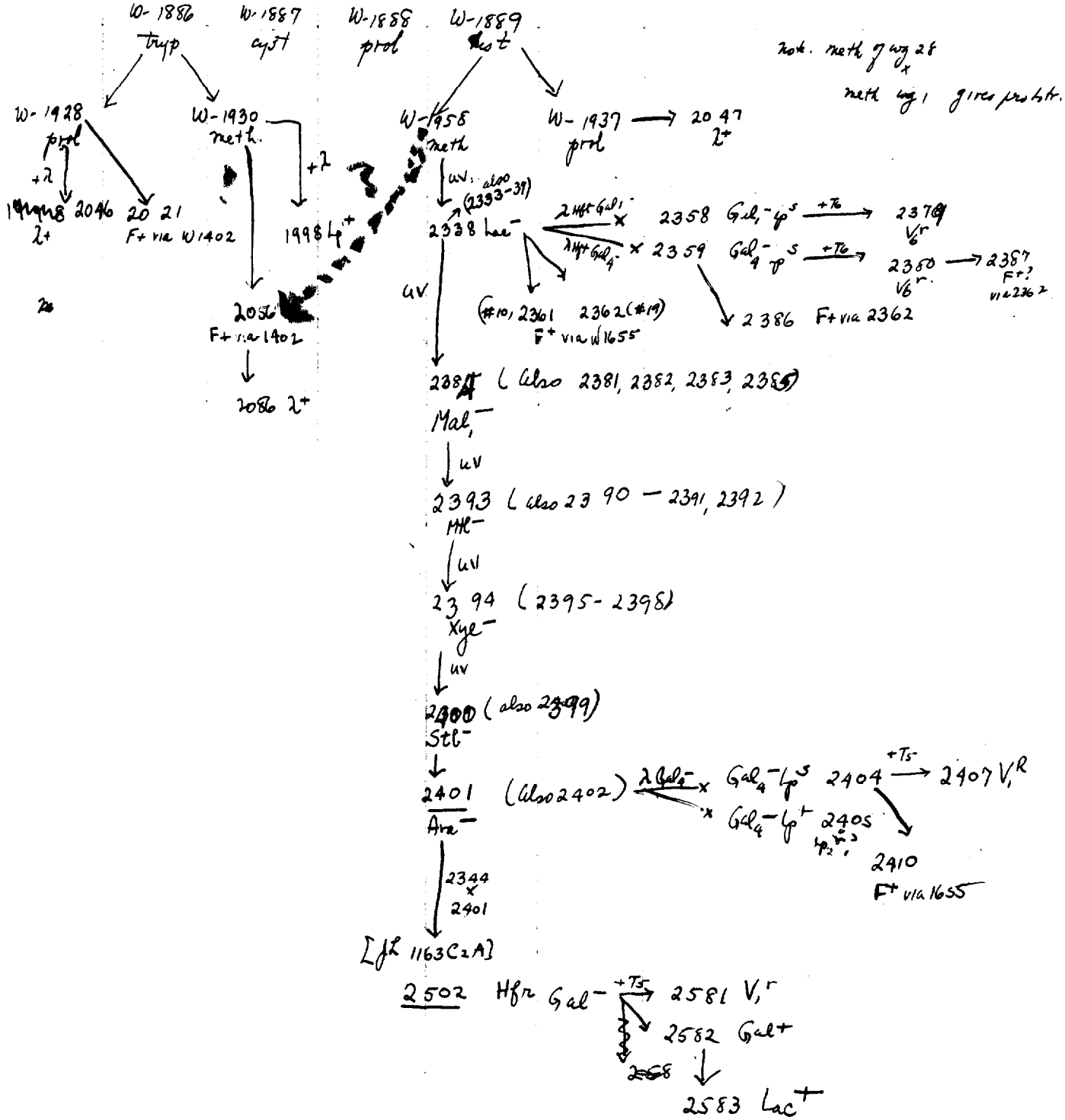
W2272 (Hist⁻)

E. M. Lederberg

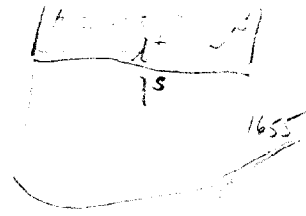
WG 28-A

= W1258-A $(\lambda^s) Mp^s S^r$

F^-



7/5/66 EmL



SB2401 line 28A ♀

2401 ara

↑

2400 ~~stl~~ $^-$

↑

2394 xyl$^-$

↑

2393 mtl$^-$

↑

2384 mal$^-$

↑

2338 lac$^-$ $^-$S^{R}4^{S}H$^-$M$^-$

↑

1958 ? met$^-$

↑

1589 his$^-$

↑

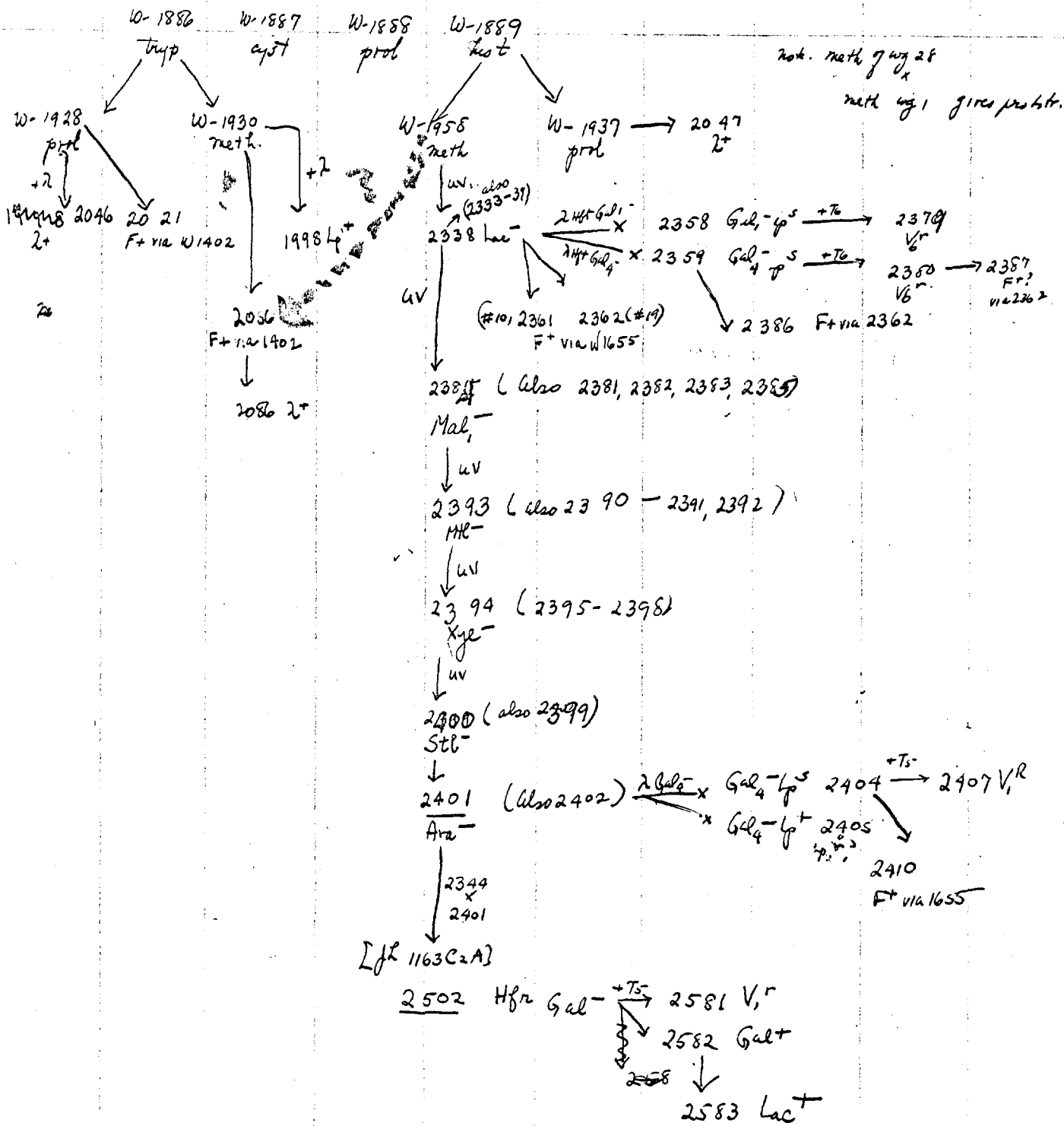
1258 NTCC123 4^{S}F$^-$

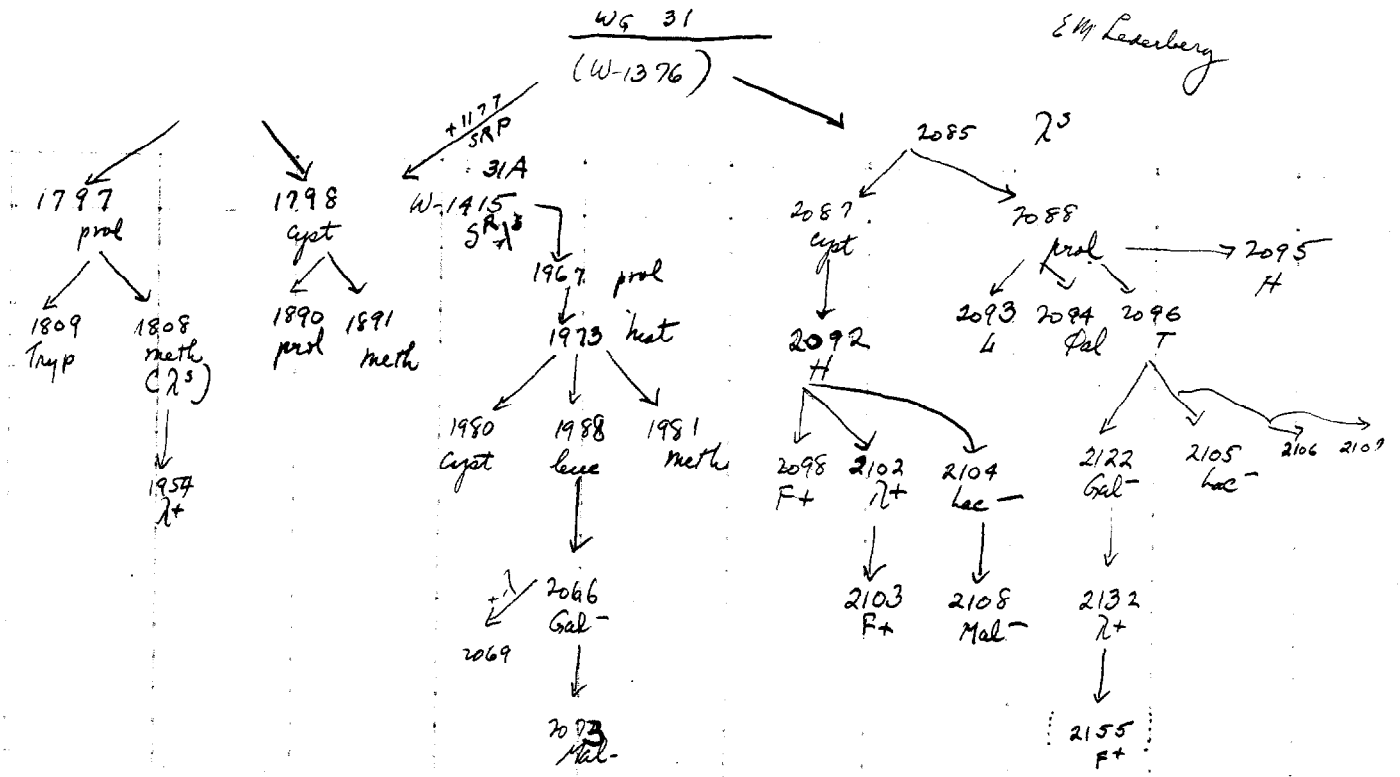
F. M. Lederberg

WG 28-A

= W1258-A $(\lambda^s) Mp^s S^r$

F^-




WG 31
(W-1376)
E.M. Lederberg
1797 prot
1798 cyst
+1177 SRP
31A
W-1415 SR
1967 prot
1973 heat
2085 λ3
2087 cyst
2088 prot
2095 H
2093 L
2094 Pal
2096 T
2092 H
1809 Tryp
1808 meth (λ3)
1957 λ+
1890 prot
1891 meth
1980 cyst
1988 leuc
1981 meth
2066 Gal−
2069
2098 F+
2102 λ+
2104 Lac−
2103 F+
2108 Mal−
2122 Gal−
2105 Lac−
2106
2109
2132 λ+
2155 F+

Gosling

Wg 33 (W1904)

W1974 prot− ⇒ W1984 prot- ~~trist~~ cyst− → W2017 mal−

W1991 IV− ⟶ IV tryptl (W2006) and IV hist (W2007) → W2014 { IV− hist− mal− lac+

W1992 ϕal−

W1993 tryptl−

W1994 hist−

W1996 aromatic (requires ϕal + tryptl + tyrosine)

gathering

Crosses with Wg 33 and Wg 34.

Wg 33

W2006 (Wg 33) x W1984 (Wg 33) → 0
2006 x W1990 (Wg 34) → 0
2006 x W1177 → 6 very small
2006 x W1817 → 25

Wg 34

W1990 (Wg 34) x W1964 (Wg 34) → 0
1990 x W2006 (Wg 33) → 21 very small
1990 x W1865 (Wg 12) → 0
1990 x W1902 (Wg 13) → 1
1990 x W1177 → 1 small
1990 x W1817 → ca 350

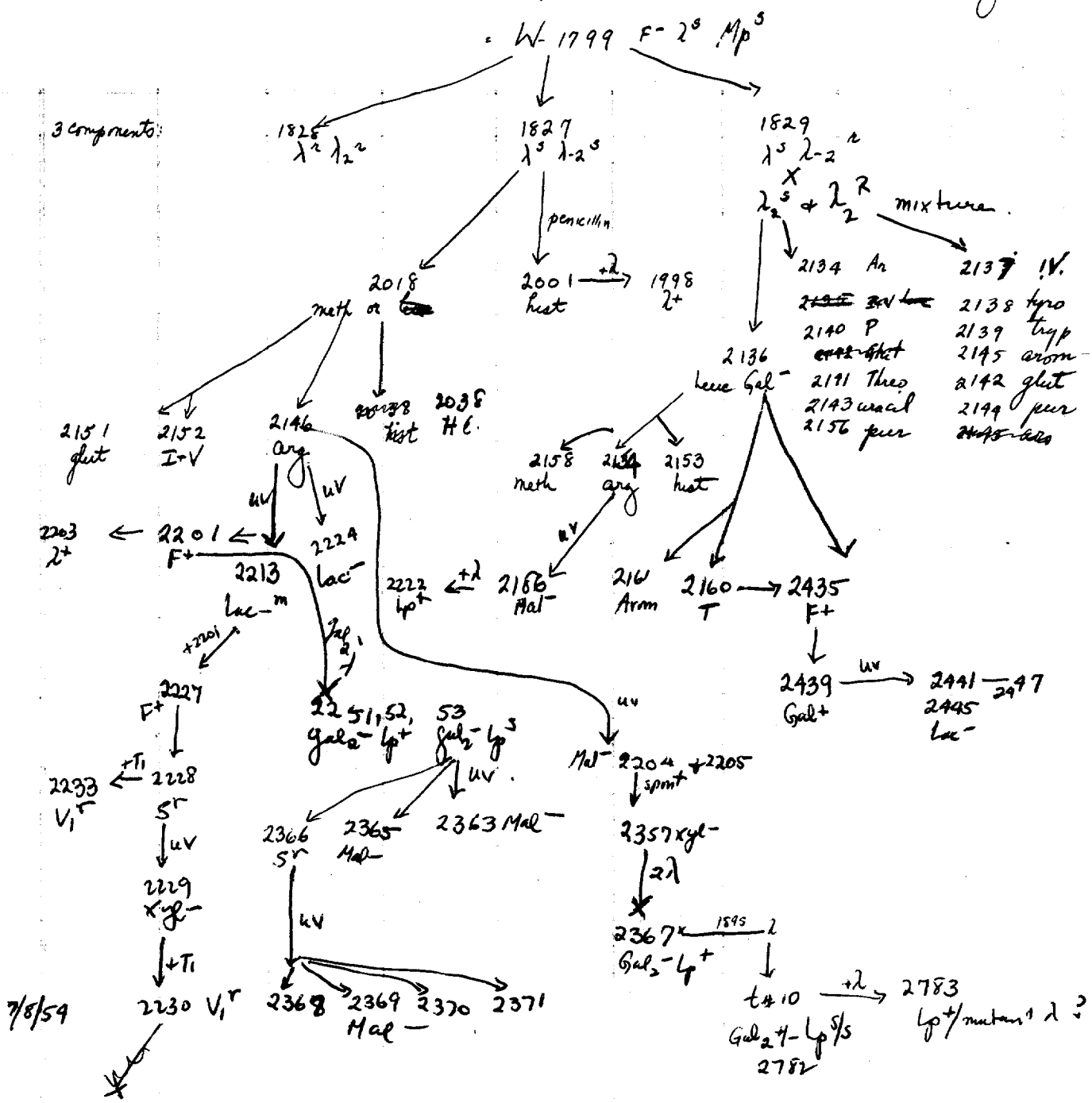
Gosling

Wg 34 (W1905)

W1933 hist- → W1990 hist- cyst-
W1952 lac- → W1964 prol-lac- → W2009 prol lac-SR
W1961 prol-

WG 47

E M Lederberg



Wg 50 (W1939)

W2008 malt

WG 5.1 = W2049

Rec'd from Weigel as C

= NTCC #122 Related to 28 & 28A?

+2 → 2176 4^+

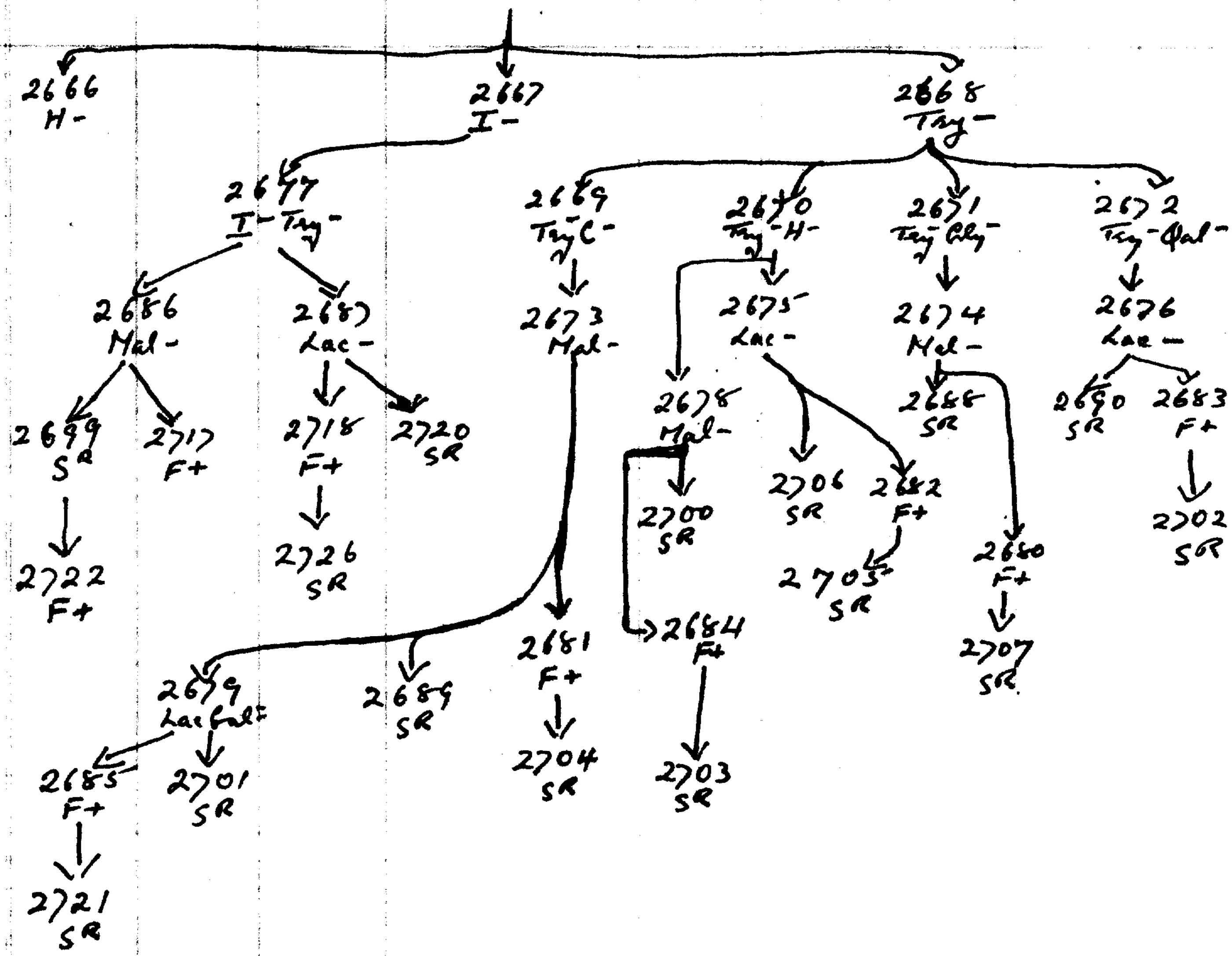
2376 Bertani C (P2) Mal-

2

1954-5

W 6 56 = W 2665 (Bernstein)

F- Suc- S^s V_1-7 R $\lambda_1 \lambda_2$ neo.



Abnormal.

WC 57 = W2691 F-5[5] V_{1-7} ... T_1T_2 ...

2719
F+

Erwinia strains × W1177.

Jan 10 ff. 1951.

Repeat E. amylovora & E. carotovora × W1177. (EMS Lac sm.)
30 + 37°.

1 car.
2 amy.
3 "
4 car.
5 amy.
6 "

All ~~carotovora~~ amylovora strains gave 20-30 colonies, Lac+, on EMS Lac sm. At 30°, heavy background; at 37° light background but the colonies were pronounced Lac+

carotovora gave scattered dense background but no colonies.

Repeat amylovora crosses & controls. Pick colonies from "2". and streak on EMB Lac, 37°.

New controls and crosses (grown together briefly) gave no colonies at 37.

Or 2 × above eventually gave a gummy Lac+ growing at 37.

Repeat cross under initial conditions (long growth together).

2/17 (5 days on EMS; 6 in broth)

---

776. Orr

C1.	no sm:	1 Lac"+" colony seen.	1	N.G.
C2		0		
X1	" "	2 "	3-4	lac-
X1	sm	1 very tiny.		
X2	"	0		
W1-2 3 plates		0		
W2		1 Lac+?	2	lac-

glucose+ but no growth on D(0)

No lac+

Repick and test for prototrophy.

∴ no prototrophs grew out!

1/19/51. ff.

	Suc	colicin 518	Cello.	Mal	Sm.		× 1177 on EMS lac sm.	W1587
128	+	−	++	+	S	v. mucoid	O	W1587
129	−	−	−	±	↓	Lac − ±	O	
130	−	−	−	±		"	Ca 400 sm. cols.	
131	±	−	±	+		"	O	
132	−	−	−	+			1 Lac+	
133	−	−	−	+			O	
134	+	±	−	+			O	
135	+ muc	±	−	+			1 Lac+	
136	+	±	−	+			O	
137	+	−	−	+			1 Lac+	
138	+	±	−	+			O	
139	−	−	−	+			1 Lac+	
140	−	−	−	+	↓		O	

#		Sm	Mal	Cb	φ or K W1321	Suc	
141	6312	S	+	—	—	—	3L+
142	5914	S	+	—	±	—	0
143		S	+	—	—	—	0
(144)		S	+	—	—	++	1Lac+ 17Lac?
145		S	+	—	—	—	0
146		R	+ muc	++muc	—	+ muc	
147		R	+ muc	+ muc	—	+ muc	
148		S	+	—	—	++	4 Lac+
149		S	+	—	+	—	0
						M	
150				±		—	0
151				—		—	0
152	Lac+			—		—	3 Lac+
(153)	Lac-			—		—	1 Lac+, - ?

WW-M

S^R photographs

Repeat 148, 144.

		Lac	Mal	Cb	Suc	colicin	
154	UC 257F	(++)	$+^m$ i $+^m$	—	-	—	0 0
155	267 F	$\pm^m$		+	+	±	1 muc
156	262 F	—		—	++	—	0 0
157	UC — F	++		—	—	++	0 0
158	" "	++		—	—	—	0 0
159	" "	++		—	—	±	0 0
160	" "	++		—	—	++	00
161 | 538	" U	++ m?		—	++	± - strong!	0
(162) | 518	" U	+	φ?	±	++	+	5 Lac+ 6 Lac+ Lac-Mal- others lethal 162 par
~~163 | 504~~	~~" Theat~~	~~coli ??~~					

all that S / S

slow

			Colicin		
163	UW-U. 13150		+		0
164	" 14511		+		0
165	"		—		ca 60 large +
166			±		0
167		S^R ———	+		
168	"		—		0
169		Suc +	++		0
170		"	—		4 +
171	"	"	—	0	8
172		"	—		0
173			+	not carbonated 1/52 Emb	0
174	"	Suc +	—	0	0
175		Suc +	— ±	0	1+ 1+ → 1 S^0
176			—		~~[illegible]~~ 1+ ~~[illegible]~~! Mal v. slow of ++ pos!
177	Sl		+++ ✓		1 sm - S^0
178			—		0
179	"		—		0
180			+		0
181		(Aerobacter) Cb + Suc +	—		0
182	"	} Lac+ Suc +	—	0	
183		} Lac- Suc +!	—	0	

umet.

Restreak 162, 156

for m.v. all that Cb -

Suc +

184 } + +++ 0
185 } - S^R _